C.S.I.R.

Field Trip No. 10
and
Soil profile notes.

Tenth Trip. ? November 27th., 1941.

Curban turn-off from Collie-Gilgandra road (268). 68-70: N.L. box, bull-oak & pine on 2 & sandy, mulga very occ., passing via mulga on 3, to, 70-71: short term. alts & inbgs. of rosewood-belah on 6-7 & thinly timbered 2, mainly forms (Ct. adults numerous). 72-74: short-term alts. & inbgs. of N.L. box-pine-bull-oak on 2 & rosewood-belah on 2-6 & occ. 6, with Gilgais round 73. Some good outbreak centres. Adults very numerous & ♂♂ copulating on an outbreak centre at 74 (a little beyond road junction at which one turns sharp right). 74-76: Rosewood-belah-huddah, occ. mulga on 3-6, puffy & small Gilgais (Adults numerous). 76-79 alts. of above with ca. equal amt. of N.L. box-pine-bull-oak on 2 & sandy, occ. patches 6-7. Adults numerous in places, seen copulating & egg-laying. 79: triple fork; took right hand road. 79-81 (Curban) Pop. Box, rosewood & occ. myall on 6-7 (mainly), 7, & 2-6, Plenty: (swamp note)

with mull-dec. puffs. Adults numerous (incip. swarm?)
in places, very numerous on a good
outbreak centre at 81 (ca. ½ mile from Curban Rly-stn).
81-83: alts. of same with bon on 2-3.
84-99 (85: Curban village) ~~compact~~ 2, with
patches of sand. Ml. bon, pine & bullock
dominant, w. bindah frequent, & pop.
bon, Ml. ironbark, mulga & rosewood occ.

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95. Small patch 2-5 w. rosewood & 1
mall. Stabilised puffs & depressions.
Chost. adults fairly num., A. fatuloss
numerous (wheat to right) 99. A small
patch of 2-6 w. pop. bon & rosewood.
Puffs & depressions. Chost. & A. fatt. num.
Chost. v. numerous in one place.
99-312 Bon-pine w. bull-oak, mulga,
rosewood & kurrajong on 2, 2-3 & 2-4. Occ. small
patches of 2-6. 308. Tundaburine.
310 Bulargambone - Bon Ridge Rd. (Gunning)
312 Weenya. 312-18½ Bon-rosewood on
2-9 & bon-kurrajong on 2-4. Very dry from
Tundaburine. Hicks old shoppers both

Immerson on Gunnin on track to Centre. Monkton said that ca. 3 weeks prev. hoppers which had hatched at top of his wheat paddock became adult & flew down the slope. A. Gutbulosa immerses his wheat.

14/10/41. Oat field 9" high. Gunnin Homestead. Adults of Chorotettix, A. cruciata, Austacris guttulosa & tenuata. Barley grass adjacent in narrow shallow watercourse. Bare spaces. Soil Ca. 2

24/10/41. Profile of type "4". Ca. 14 miles NE of Trangie on very wide part of stock route on Oxley Highway (4 miles SW of Bundemar entrance). General description of area: A system of large, mulga, scalded areas, associated with Paddy's River, on pale brown greasy soil (4b), and intersected by very shallow watercourses with cracked, but not self-mulching, soil, and by occasional slight rises of "2" bearing mainly poplar box. The area is bounded on the E & NE by a stretch of flat country carrying dense Currant bush as the dominant, (both Nos. & tasks) interspersed with mulga, rosewood, poplar box, nl. box (narrow-leafed) & a small phyllode acacia (sample). No budda at all, but Fred Body says a thick budda scrub used to grow on this country.

Photos: (1) Profile at ca. 4 p.m. (2) Profile ~~Height of profile~~ at 1.30 p.m. (3) Surface of soil, showing stunted "Bassia", grass, & cuneal spp. of lichen. Tendency to crack into rectangles of ½-3" cubes ~~4. Veg. of very slight depression with a little cracking, situated 11 yds. NE of profile~~. (4) looking W. ~~Chloris truncata prominent~~ Slight depression in fore-ground with CHLORIS Chloris & Danthonia. Pit. Box in background. (6) Effect of wind & water erosion; looking E. (5) Currant bush, mulga, box, on scalding type (3-4?) with Chloris dominant. ~~6. Same as 5. 9. Same as 3.~~

Conditions for ca. 100 yds. round profile: cut veg. station only very shallow depressions a few yds. across, with some cracking, but not on sm. Probably little erosion has occurred at site of profile, but in places, especially somewhat S, wind & water erosion have removed surface soil from flat areas & piled it against the veg. station of the depressions cleared self-mulching

giving the appearance of more extensive erosion than has probably in fact taken place. Eroded surface smooth, free from cracks.

Profile samples:- (1) upper 1-2". (width of tube from top, comprising what is prob. the "A" horizon): more or less buff-colored, very fine-grained & dusty, possibly high in silt. (2) 8". ~~Probably~~ ?B1. Medium brown clay (?). Concretions, prob. $CaCO_3$, ca. ½" diameter, very occ. in lower half of horizon (sample 6). (3) 16". ~~Probably~~ ?B2. Consid. more crumbly than B1, with crystals among aggregates, prob. of gypsum. Colour same, but app. paler owing to crystals. (4) 2ft. ?B3. App. identical w. B1. (5) 3ft. 1". ?B4. Slightly paler, slightly yellowish-brown, clay. (6). B1 to show concretion. ~~Top horizon apparently structureless. Structure on of small clods~~ App. no natural structure, but under pick breaks into ~~clods. Structure apparently on of~~ almost small clods, ca. 1" diam. throughout profile.

Profile of "5".

Locality: Gin Gin Plain, ca. 9 miles NE of Trangie on Oxley Highway. This plain is situated on a very gentle slope between a low rise of "2" bearing ironbox & ironbox-pine, and a belt of poplar box on pale grey poplar box soil bearing "4" flanking the S. side of the Macquarie River. Narrow belts of "4-5" & "2-5" flank the plain on the down-slope & up-slope sides resp. Occ. patches of ironbox on slightly lighter soil are scattered about. Original veg. of plain was probably myall, rosewood & perhaps mild lemon, but it has been ~~almost~~ completely cleared of myall, & almost completely of rosewood, except in a paddock in the SW corner of the area mapped, where mild lemon is dominant, with myall common & rosewood occ. Stick. app. of myall, are to be found scattered about plain, & are present in the neighbourhood of the profile site. Parts of the plain are heavier & more ru-

than at the profile site, shelf being almost absent, but the red-brown-choc. colour remains.

Photos: (1) looking S from the profile site, showing box-pine in distance (2) looking W from profile site, showing paddock with wild-lemon & myall. [Duplicate here material under "Photos" on p. 9.]

The profile site. Typical "5", sloping gutty to NNE. Puffs, depressions & shelves of ca. equal area. Unbroken surface, pale-red. brown - rb. Broken surface of puffs, red- dark brown. Depressions, dark brown. Puffs usually 10-20 ft. in diam., typical in form. Typically sparsely veg. w. Chloris truncata, w. ~~Stipa~~ [illegible]. small yamanbilla ~~[illegible]~~ round the edges. when very heavily cracked, puffs bear thistle yamanbilla. Shelves, sparse Chloris. Shallow depressions, dense Chloris. Deep (large depressions (6" - 1 ft.) are sparsely veg. w. Chloris in centre, but tend to be surrounded by the deeply cracking type of puff, on which

grows dense thistle with or without
yanganbile, & with Chloris. Smaller deep
depressions (6") have thistle in centre,
yanganbile in ring outside. Thus w.
regard to slope (& water ~~coal~~ supply?)
yanganbile & thistle seem to have a
narrow range of tolerance, the latter
requiring more water than former, but
the dry mark limits being reached for
both in the habitat of "5". Chloris
occupies the remaining area, but is
not plentiful on either very dry or very
moist. Ch. cana

N.B. The whole area shown on map to
E of fence line is a stock reserve,
but at present not very heavily eaten
out.

The puffs & depressions show a distinct
tendency to elongation down the slope.
In small paddock where stocking was
normally light, thistle was absent,

+ yanganbile much more numerous, but still rare & poorly dev. on puffs, unless very dense Cracked; present in all depressions.

Photo: (3) Mild lemon & young myall in myall paddock. Soil heavier than at profile site, shelf absent or very poorly dev. (4) Myall paddock adjacent to fence, showing (scarcely noticeable to the unaided eye) tendency to parallel arrangement of elongated puffs down the slope. Yanganbile numerous. (5) Sequence of shelf, large deep depression & puffs just to E of profile. ~~site~~ (6.) Close-up of surface of puff, w. Chloris. (7.) Close-up of shelf w. Chloris. (8) Close-up of large deep depression w. sparse Chloris in centre & thistle round margins. (9) Small heavily Cracked puff w. thistle. (10) Shallow depression w. dense Chloris. (11) The profile, seen from puff end at 5.30 pm, with sun under cloud. (12) The profile, in shelf part, same conds as 11.

Description of profile: length of trench ca. 15ft.. Compensating, from E to W, 3ft. of depression, 6ft. of shelf, 16ft. of puff. following horizons distinguishable in shelf position (depth throughout 4ft.):-

(1) (A?) 0-3 ins. brown, nutty to flakey, friable clay (?), paler + redder on top, Average size of units ca ½" diameter. Containing most of the Chloris roots.

(2) 3"- ca. 18". V. dark brown clay, in very large vertical clods separated by cracks ca. ¼"-½" wide, extending from base of horizon (1) into horizon (3). little or no $CaCO_3$. Grass roots frequent.

(3) 18"- ca. 33" Dark brown to ~~blk~~ clay in irregular clods ~~which~~ a few inches in diam., penetrated to some extent by fine dec. roots continuations of cracks of horizon (2). V. A good deal of $CaCO_3$ in concretions ca. ½" in diam. Paler + redder below.

(4). 33"-48". Irregular clods similar to those of (3), but less distinct. ~~Separate~~ Medium to ~~blk~~ clay; no roots. Crystals of

gypsum(?) of moderate size ($\frac{1}{8}$ – $\frac{1}{4}$" long or more), frequently in patches of $\frac{1}{2}$" – 1" diameter, scattered throughout.

Profile damp from ca. 24".

Moving towards the depression end, horizon 1 became much thinner & less differentiated in structure & colour, until in depression it was scarcely distinguishable at all. Horizon 2 (0–15") became harder, more compacted into very definite vertical clods separated by cracks up to 1" wide. Slightly redder & sandier. Small concretions of $CaCO_3$ seen at 8". Horizon 3, with large concretions as in shelf, (15"–26"). Horizon 4a (26"–48"), as before.

Moving towards puff, horizon 1 [illegible]

Plato:

Profile of [illegible].

Locality: About ½ mile from Allegheny road to Dandridge. Practically flat country, but a few (rather abrupt) rises of 5 to 10 ft. A hill to the N.W., a low hill, [illegible] farm house and brick [illegible] at a considerable distance from W. to N.W. The profile cut is situated on the right hand side of the road from Allegheny to Dandridge, the road at this point being ca. 200 yds. from the boundary fence. The profile is ca. 40 yds. from the road. Within the confines of the profile, the only [illegible] are pasture land with some [illegible] bushes and trees. The [illegible] is [illegible] (no. within ca. 20 miles 52 : 69). The [illegible] are rather thickly distributed, the dominant species being [illegible] (no. of observations of this species within ca. 100 yds. [illegible], [illegible] 53). As a result there is practically no [illegible] land [illegible]

14

[illegible] Tooth [illegible]
[illegible] Tooth [illegible]
[illegible] Tooth [illegible]

0-30.4" (1). A brown sandy loam (?A1) 2cm
with a few small flints, the top 1-2" is loose and
the rest consists of large angular flints
This appears to be a residual layer
which has been concentrated by
wash from the south, & has become a certain
amount of the clayey parent material
(2) 4-11" A brown loam (?A2)
11-15" A yellow sandy loam (?A2) (3)
with a few small flints, & a few small
angular flints (?B horizon
of ?A2). Roots to 5" & up to 4" diam.
are common down to ca. 9". Roots of
4
4/ 1" diam. are numerous to a
little below the root limit at the boundary
of horizons 3 & 2. Roots of 1" diam.
are also common in horizon 4-6, but
are much less numerous.
(4) 15-ca. 23" Light brown clay with
a few flints & a few rusty mottles
(?B1)
(5) ca. 27-41" Mottled yellow-brown and

Formation of grey clay, with occasional nodules
of limestone. The upper portion of the
deposit contains about 2% of $CaCO_3$. (0.3.4)

(6) 41' – 45' Grey Clay, with $CaCO_3$ concretions
from size of $\frac{1}{2}$ – 1". (1.3.2)

Profile of 3.

Landsby: 3 km. from Jennersdorf (18+ miles from Vienna) on the road to Güssing; 19 miles by road from Güssing. Pop. 1,200. Mostly Protestant. Surrounded by poplars. Has a Gothic church, a Renaissance castle, and a Baroque church. Houses are mostly one storey high, with thatched roofs. Streets are unpaved. Has a Gothic church, a Renaissance castle, and a Baroque church. Houses are mostly one storey high, with thatched roofs. Streets are unpaved.

Profile of 4.

Landsby: 3 km. from Jennersdorf (18+ miles from Vienna) on the road to Güssing; 19 miles by road from Güssing. Pop. 1,200. Mostly Protestant. Surrounded by poplars. Has a Gothic church, a Renaissance castle, and a Baroque church. Houses are mostly one storey high, with thatched roofs. Streets are unpaved.

(1)

(2)

(3)

(4)

(5)

(6)

[Insert here the material under "photos" on p. 22]

the N boundary) (3) 4 ft 5 – ca. 13" vertical, dark brown, very large clods, with cracks up to 2" wide running from top to bottom of interval for 6–12". This boundary has CaCO3 concretions from ca. 10", but they do not become large, massive until the next lower boundary (stage V) has ... ca. 2 ft. Such concretions are ... (i.e. from Cretaceous) but ... different ...

(4) 19–42". brown clay, with little structure, breaking into CaCO3 ... under the pencil. CaCO3 concretions ... Humphreys, mainly small, and P.C., up to ca. 3–4"? Cylindrical ... from ca. 30"; rec. from 25". Less than 1" from a trench before last ... the profile and the top. Cracks ... down to 1 ft. Clayey ...

fine [illegible] [illegible] [illegible]

Profile of "7".

Location:

[illegible] 6

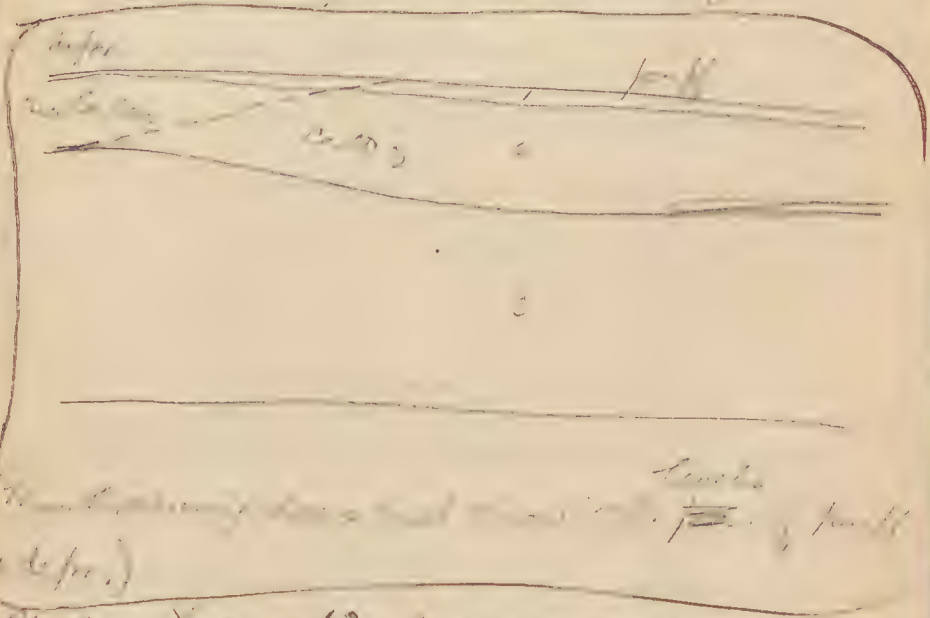
Vegetation of puffs: mainly [illegible], [illegible], [illegible]. [illegible]

Factors [illegible]. (1): [illegible] puffs to [illegible]. [illegible]. (2). [illegible] [illegible] puffs [illegible] [illegible]. (3) Puff [illegible] (4) [illegible] puff (5) [illegible] (6) [illegible]

[illegible] [illegible] p 31]

Composite profile : Profile made up from
two or more profiles to obtain the required section
of the cutter, as ~~shown~~ in fig. 31. from
following formulæ can be deduced :-

(1) The radius of the circle $= \frac{D}{2}$, D = diameter of
the cutter, with top $\frac{1}{16}" - \frac{1}{8}"$ from (A)
(2) $2\frac{1}{2} - 2\frac{1}{4}$: Side face of large circle
making an angle of $1° \pm 5'$, and a small
end cone making an angle of $6° - 12°$ with the
clearance circle to cut the hook.
Large cone ~~angle~~ of $\frac{3}{4}"$ at $6 - 12°$ inclined to
face. (3) $\frac{21-49}{}$: Face of the cutter
top inclined back ~~at~~ by an angle of
$1 - 2°$ to clear. Back face
to ca. $30°$, radius between ~~the~~ face and
back face, being $\frac{1}{16}"$ which is ~~the~~ same
radius as that of the gullet.
Ca CO_3 present in the composition of the
cutter for purpose of ~~the~~ cutting. -
Angle of cutter ~~is~~ to be $7°$. Clearance
angle to be found to be $9°$. Profile
of the cutter ~~is~~ to be such that



Remarks. (7). Profile of puff = 1 in. (8) Profile of depth = 1 in.

Some of the values of the ratio of the depth to the puff: 2", 13", 37" ... 8".

Profile of "8".

Locality: ca. ? miles from Inverness on Inverness-Nairn road. Large hummocky area of plain from which hill, on which old mound was situated on the west, rises abruptly. Quite flat. Profile was taken at ca. centre of plain, which is about 1 mile from the road. Direction of profile at right angles to the road. Ground at both ends sloping towards the road by degrees when hole "2". Soil on which mound was, is black in hole 3 ft. deep from road to face.

Surface pebbles, surface of ground is uneven, the higher ridges having the greatest number of pebbles. Soil puffy and readily crumbled. Surface 4" - 5" broken into polygonal flakes which lie loose on 7". Colour, brown-grey. Vegetation almost entirely composed of heather (ca. equal proportions) ~~heather~~ bracken, with bents, a small amount of grass.

A breakaway in horizontal flatness is evident in all hangings, particularly disappearing in lower parts of 31. Except for the hangings 11, the whole profile is very similar to Hall 7. Hall 2 (2) profile. Later restoration. Only central portion retained up.

Profile "6":

Locality: Corner of Little Bullock Dray paddock, Salt Bundemas, about 300 yds from ~~Stat~~ Bore house. The country here is mainly belah, but extensive clearing & removal of stumps makes it difficult to say to what extent it was originally dominant. Along the two fences a belt of only slightly thinned belah has been left. The trees here are tall & spaced at an average distance of 10ft. or less. Mulga & rosewood do not show up prominently among them. The growth made where the belah has been cleared being apparently abnormal. (Orginal growth among belah may account for the tall habit of some rosewood). Mulga seems Box very rare ~~rare~~ to the N, common to the S. The profile cut has been made ca. 40 ft ~~out~~ from the margin of the uncleared belah. Country quite level, but very uneven in surface, small gilgais

with cracks & cave-ins alternating with low mounds & flat areas. Soil prob. a fairly ~~Sand~~ loam 6" with mod. Sm. ~~Surface~~ granular rather than flakey, & with very surface flakey mid-Grey in Colour. Vegetation very varied, according to level, much more so than on any of the other types sampled. Under the belahs Chloris acicularis & "bassia" sp. are dominant, the latter predominating where trees are dense. In cleared areas the depressions seem to be occupied largely by tall Yangan bill & (?) Asp. hakeoides, the level areas (shelf?) by Chloris acicularis, & the mounds by crowfoot & a mauve-spiked plant.

Photos - Roll 3 (3) looking SE down the fence, with uncleared belah on other side. Occ. rosewood & wilga on right.

(4) Veg. beneath uncleared belah, showing Chloris acicularis & bassia. Wilga to right.

(5) looking ~~SW~~ 5 ca. 100yds from profile. Rosewood, wilga & occ. uncleared belah.

(6) Yangan hill in depression. (7) Chloris acicularis in shallow depression. (8) Crowfoot debris on small mound. (9). Profile under mound. (10) Surface of soil 5 of profile, looking from depression to mound.

Description of profile:- Under mound: (1) a poorly diff. layer without large cracks, mulch, seems to extend to ca. 8 ins. - very slightly brownish grey on top, med. grey below. No Calc. (2) 8-ca 27 ins. large hard clods, med. grey w. cracks up to ½" wide. Small particles Calc. reach right to top of this layer, in lower half there are large, soft, irregular concretions up to ¾" diam. Gradual paling + very slight browning of this layer from top down. (3) 27-40" Pale grey, less hard + large-clodded layer with Calc. as in (2), but cracks from (2) extend well into it, frequently right to bottom. (4) 40-48" Same, but slightly browner. Gypsum replacing Calc. Rather large crystals (ca. ⅛"). One crack

descends even into this layer.
In the depression, layer (1) is dark grey in colour & reduced to 0-1". (2) comes almost to surface, is poorly diff from (3) at ca. 18". (3) 18-26". (4) 26" - 48" but it less Col than under mound, Rock to ca. 6". Surface of depression ca. 4" lower than that of mound. Rock observed to ca. 18".